Project Baseline Summary Report

Data Source: **EM CDB**

Report Number: **GEN-01b**

Operations/Field Office: **Rocky Flats**

Print Date: **3/9/2000**

Site Summary Level: **Rocky Flats Environmental Technology Site**

HQ ID: **0349**

Project **RF013 / Closure Caps Project**

General Project Information

Project Description Narratives

Purpose, Scope, and Technical Approach:

Purpose: Predecessor Projects: Installation of the 700 Area cap requires work to be completed or partially completed on the following clusters: 207, 559, 566, 569, 707, 750, 750 PAD, 771A, 771/774, 778, 779, 790, H2OGIZ, INFELN, PWTSN, and SECNPZ. Removal of site pavement and building foundations requires the completion of all D&D activities. Recontouring, regrading and revegetation of the industrial area requires the completion of all D&D and remediation work in the industrial area.

Within the industrial area, production activities have been conducted since the early 1950`s. During this time many inadvertent releases of contaminants occurred including releases from the process waste lines. Therefore, the purpose of the closure caps project is to cap areas of the Site where it maybe impractical to remediate to acceptable risk levels for the intended land use in accordance with the RFCA vision for the industrial area. This would include capping portions of the 700 area, removing pavement and building foundations and recontouring, regrading, and revegatating the remainder of the industrial area. This capping activity would be conducted after IHSS remediation and D&D activities have been completed. The objective of this activity is to reduce infiltration and direct runoff to reduce the risk to human health and the environment by eliminating the pathway to which these receptors may be exposed. This would be accomplished by constructing the closure cap and recontouring, regrading and revegatating the remaining industrial area. The cap that will be utilized is an evapo-transpiration vegetative type design.

Kaiser-Hill Compliance and Performance Assurance reviewed DOE orders, Colorado Code of Regulations and the Code of Federal Regulations and determined that a 1000 year cover would not be required. Therefore, a vegetative cap design was developed and is being proposed for use at the site. The area of the cap was determined by identifying the footprint within the area that was contaminated and posed a low long term risk that could be mitigated through engineering controls. This area was digitized to determine the areal extent of the cap. A typical cross section was developed based on the conceptual vegetative cap design and used to estimate volumes of material needed for the cap.

Scope: The closure cover activity will include:

1. Removal of Site pavement and building foundations.

2. The design and placement of cap over the 700 area.

3. Recontouring, regrading and revegatation of the industrial area.

Technical Approach: The cap that will be utilized for the industrial area is an evapo-transpiration vegetative cover type cap that is currently being used in arid climates. The vegetative cover design offers better performance at a lower cost because it eliminates the clay layer which tends to crack and leak. It also eliminates the geomembrane. Prior to building the cap, initial grading would be conducted and site pavement and building foundations would be removed, if necessary. The construction of the cap will utilize traditional construction techniques and equipment. The majority of the material needed to construct the cap is available in the local area. After completion of cap construction, final recontouring, grading and revegetation would be conducted in the non-capped areas in order to limit infiltration and direct runoff. This would include a layer of clean topsoil to

Project Description Narratives

establish a horizon capable of supporting an indigenous plant community. Prior to regrading and revegetation of the industrial area, the remaining pavement/parking lots would be removed. The cap would provide a cover over contaminated media that remained in place after remedial activities are completed and also limit the infiltration of water that would otherwise migrate through the media and potentially reach groundwater.

The progress of both commercial and DOE supported technology development activities that have the potential to reduce Site costs or risk will be monitored. Specific technology development activities that could benefit the closure cap project are the Advanced Closure Project at Sandia National Laboratory and the capping study being performed at the Rocky Mountain Arsenal. These projects are addressing the arid climate, evapo-transpiration vegetative cover type designs and may well reveal improvements to the current design.

Project Status in FY 2006:

All work scope will have been completed with the exception of preparing the 700 Area Cap Closeout Report.

Post-2006 Project Scope:

Post 2006 scope will consist of preparing the 700 Area Cap Closeout Report

Project End State

The cover project is one of the final EM projects for the Site to reach interim closure. The only EM activities that will occur after placement of the cover is long term monitoring and maintenance.

Cost Baseline Comments:

Cost estimates are based on assumptions and data developed by the technical groups that have responsibility for managing the work. To the extent practical, all cost estimates are Activity-Based Costs (ABC) and tied directly to a defined and detailed work scope. The estimates are developed at the activity level and are further divided into line items. Line items represent individual resource contributions to activities and are the lowest level of input to the planning system. Once the cost estimate is developed,
each activity is evaluated for cost, technical and schedule risk and the appropriate contingency is determined. Detailed estimates and the basis of estimates (BOEs) for the 2006 Closure Plan are available at the Site.

Safety & Health Hazards:

The principle hazards in the Closure Caps Project are low radiological and chemical contamination as well as other standard industrial hazards. Most of these hazards will exist throughout the project and are related to removal of pavement and foundations, placement of the cap, recontouring and regrading the area, and revegetating the surface. These hazards will be analyzed and categorized in accordance with the RFETS Safety and Health Program infrastructure policies, manuals, and procedures.

Safety & Health Work Performance:

This project will be completed within the RFETS Safety and Health Program and within the controls and documents defined above to ensure the safety and health of the worker, public and the environment. RFETS has implemented an integrated safety management system consisting of the following elements: radiological safety, criticality safety, emergency management, fire safety, industrial hygiene, nuclear safety, occupational medicine,

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Project **RF013 / Closure Caps Project**

Project Description Narratives

occupational safety, safeguards and security, safety integration, performance oversight, and standards management. RFETS provides site wide infrastructure programs for each functional area to establish consistent safety standards and support for this project. Safety and health success results from the efficient and effective implementation of these programs. This project is responsible for ensuring that the necessary elements of the safety and health programs are incorporated into the specific project plans and implementing documents, and that an appropriate Readiness Determination and Safety Evaluation Screen (SES)/Unreviewed Safety Question Determination (USQD) have been performed.

PBS Comments:

No additional information.

Baseline Validation Narrative:

Although the 2006 Closure Plan has not been officially validated, it has undergone a high level review by Rocky Flats Field Office (RFFO) and Headquarter personnel. Current independent validation efforts include the following: 1) RFFO has contracted an independent firm to perform a baseline confidence review of the 2006 Closure Plan by the end of FY99, and 2) the Office of Field Management (FM) has contracted a big-five accounting firm to validate the 2006 Closure Plan.

In addition to the 2006 Closure Plan validation efforts, results/recommendations from several previous baseline validation efforts were used in the development of the 2006 Closure Plan. These validations included: 1) The U.S. Army Corps of Engineers (USACE) performed a validation of the Rocky Flats Ten Year Plan in FY97/FY98, 2) Kaiser-Hill contracted Price Waterhouse Coopers, LLP to conduct and independent validation effort of the 2010 Closure Project Baseline that concluded in May of FY99, and 3) Kaiser-Hill engaged Arthur Andersen, LLP to conduct a schedule and cost risk review of the 2010 Closure Project Baseline.

General PBS Information

Project Validated? **Date Validated:**

Has Headquarters reviewed and approved project? No

Date Project was Added: 12/1/1997

Baseline Submission Date:

FEDPLAN Project? Yes

Drivers:

CERCLA	RCRA	DNFSB	AEA	UMTRCA	State	DOE Orders	Other
Y	Y	N	N	N	Y	Y	Y

Project Identification Information

DOE Project Manager: Jessie Roberson

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Project **RF013 / Closure Caps Project**

General PBS Information

DOE Project Manager Phone Number: 303-966-2263

DOE Project Manager Fax Number: 303-966-4775

DOE Project Manager e-mail address: ten.year.plan@rfets.gov

Is this a High Visibility Project (Y/N):

Planning Section

Baseline Costs (in thousands of dollars)

	1997-2006 Total	2007-2070 Total	1997-2070 Total	1997	Actual 1997	1998	Actual 1998	1999	2000	2001	2002	2003	2004	2005	2006
PBS Baseline (current year dollars)	40,185	1,855	42,040					30	92	480	0	670	649	8,086	30,178
PBS Baseline (constant 1999 dollars)	34,809	1,562	36,371					30	90	458	0	613	582	7,096	25,940
PBS EM Baseline (current year dollars)	40,185	1,855	42,040					30	92	480	0	670	649	8,086	30,178
PBS EM Baseline (constant 1999 dollars)	34,809	1,562	36,371					30	90	458	0	613	582	7,096	25,940

	2007	2008	2009	2010	2011-2015	2016-2020	2021-2025	2026-2030	2031-2035	2036-2040	2041-2045	2046-2050	2051-2055	2056-2060	2061-2065	2066-2070
PBS Baseline (current year dollars)	1,855	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PBS Baseline (constant 1999 dollars)	1,562	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PBS EM Baseline (current year dollars)	1,855	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

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	2007	2008	2009	2010	2011-2015	2016-2020	2021-2025	2026-2030	2031-2035	2036-2040	2041-2045	2046-2050	2051-2055	2056-2060	2061-2065	2066-2070
PBS EM Baseline (constant 1999 dollars)	1,562	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Baseline Escalation Rates

1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
		0.00%	2.70%	2.10%	2.10%	2.10%	2.10%	2.10%	2.10%	2.10%	2.10%	2.10%

2010	2011-2015	2016-2020	2021-2025	2026-2030	2031-2035	2036-2040	2041-2045	2046-2050	2051-2055	2056-2060	2061-2065	2066-2070
2.10%	2.10%	2.10%	2.10%	2.10%	2.10%	2.10%	2.10%	2.10%	2.10%	2.10%	2.10%	2.10%

Project Reconciliation

Project Completion Date Changes:

Previously Projected End Date of Project: 9/30/2010

Current Projected End Date of Project: 11/3/2006

Explanation of Project Completion Date Difference (if applicable):

Scope Deletion

The 300 Area cap has been eliminated.

Efficiencies

New Scope

Cost Growth

Science & Technology

New evapo-transpiration cap design.

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Project **RF013 / Closure Caps Project**

Project Reconciliation

Other

The scope of work and end state conditions for the 2006 Plan are similar to the current 2010 Baseline, with a four-year acceleration and a reduction in cost being the two most significant differences. The bottom-up estimate for the 2006 Plan is a $1.65 billion improvement over the comparable activity-based bottoms-up detail estimate for 2010.

To close the Site four years earlier than the current 2010 Baseline requires a strategically different approach. The two key principles followed in preparing the 2006 Baseline were: 1) safely reducing the urgent risks first, and 2) performing work in a sequence that reduces or eliminates operations, maintenance and security costs (often referred to as - mortgage costs) as early as possible. Key to the 2006 Baseline approach is early closure of the secured Protected Area. Closing the Protected Area as soon as possible means that the high security and maintenance costs for this area can be redeployed to accelerate other closure activities. In addition, D&D and SNM risk reduction activities will be performed simultaneously rather than sequentially, supporting both the risk reduction and mortgage reduction principles. The D&D of non- and lower-contaminated facilities and most environmental remediation work will be deferred until later in the project to allow resources to be focused in the areas that result in the greatest reduction in risks and mortgage costs.

Project Cost Estimates (in thousands of dollars)

Previously Estimated Lifecycle Cost (1997 - 2070, 1998 Dollars):	61,922	**Actual 1997 Cost:**		**Actual 1998 Cost:**	
Previously Estimated Lifecycle Cost of Project (1999 - 2070, 1998 Dollars):	61,922	**Inflation Adjustment (2.7% to convert 1998 to 1999 dollars):**			1,672
Previously Estimated Lifecycle Cost (1999 - 2070, 1999 Dollars):	63,594				

Project Cost Changes

	Cost Adjustments	Reconciliation Narratives
Cost Change Due to Scope Deletions (-):		
Cost Reductions Due to Efficiencies (-):		
Cost Associated with New Scope (+):		
Cost Growth Associated with Scope Previously Reported (+):		
Cost Reductions Due to Science & Technology Efficiencies (-):		
Subtotal:	63,594	
Additional Amount to Reconcile (+):	-27,223	
Current Estimated Lifecycle Cost (1999 - 2070, 1999 Dollars):	**36,371**	

Milestones

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Project **RF013 / Closure Caps Project**

Milestone/Activity	Field Milestone Code	Original Date	Baseline Date	Legal Date	Forecast Date	Actual Date	EA	DNFSB	Mgmt. Commit.	Key Decision	Intersite
PA Cap Area Under-Bldg Contamination Remediated	RF-0081		3/30/2006		3/30/2006						
Complete 700 Area Cap Construction	RF-0551		8/30/2006		8/30/2006						
Start 700 Area Cap Construction	RF-0565		8/12/2005		8/12/2005						
Complete PBD 013 - Closure Caps Project	RF-OTHE-13		11/3/2006		11/3/2006					Y	
PBD 013 Project Start			10/1/1997								

Milestones - Part II

Milestone/Activity	Field Milestone Code	Critical Decision	Critial Closure Path	Project Start	Project End	Mission Complete	Tech Risk	Work Scope Risk	Intersite Risk	Cancelled	Milestone Description
PA Cap Area Under-Bldg Contamination Remediated	RF-0081	Y									Kaiser Hill Internal (KHIs) Milestones
Complete 700 Area Cap Construction	RF-0551	Y									Kaiser Hill Internal (KHIs) Milestones
Start 700 Area Cap Construction	RF-0565									Y	Kaiser Hill Internal (KHIs) Milestones
Complete PBD 013 - Closure Caps Project	RF-OTHE-13				Y	Y					Kaiser Hill Internal (KHIs) Milestones
PBD 013 Project Start				Y							PBD 013 Project Start

Performance Measure Metrics

Category/Subcategory	Units	1997-2006 Total	2007-2070 Total	1997-2070 Total	Actual Pre-1997	Planned 1997	Actual 1997	Planned 1998	Planned 1999	Planned 2000	Planned 2001	Planned 2002	Planned 2003	Planne 200
RS														
Assess.	NR	0.00	0.00	0.00										
RS														
Cleanup	NR	1.00	0.00	1.00										

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Project **RF013 / Closure Caps Project**

Performance Measure Metrics

Category/Subcategory	Units	1997-2006 Total	2007-2070 Total	1997-2070 Total	Actual Pre-1997	Planned 1997	Actual 1997	Planned 1998	Planned 1999	Planned 2000	Planned 2001	Planned 2002	Planned 2003	Planne 20(
Tech.														
Deployed	Ntd	2.00	0.00	2.00						2.00				

Category/Subcategory	Units	Planned 2004	Planned 2005	Planned 2006	Planned 2007	Planned 2008	Planned 2009	Planned 2010	Planned 2011 - 2015	Planned 2016 - 2020	Planned 2021 - 2025	Planned 2026 - 2030	Planned 2031 - 2035
RS													
Assess.	NR												
RS													
Cleanup	NR			1.00									
Tech.													
Deployed	Ntd												

Category/Subcategory	Units	Planned 2036 - 2040	Planned 2041 - 2045	Planned 2046 - 2050	Planned 2051 - 2055	Planned 2056 - 2060	Planned 2061 - 2035	Planned 2066 - 2070	Exceptions	Lifecycle Total
RS										
Assess.	NR								1.00	1.00
RS										
Cleanup	NR									1.00
Tech.										
Deployed	Ntd									2.00

Release Sites

Site Code	RSF ID	Change Flag	Description	Class/Subclass Name	Planned Assess. Year	Forecast Assess. Year	Actual Assess. Date	Planned Comp. Year	Forecast Comp. Year	Actual Comp. Date	Acc. Year	No Action	Comp. Status	RAD
RFTS	3324		PRJ 700CAP \ 700 Area	/				2006				N		

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Project **RF013 / Closure Caps Project**

Technology Needs

Site Need Code: RF-ER08

Site Need Name: Capping Design for Arid and Semi-Arid Climates

Focus Area Work Package ID: SS-04 **Focus Area Work Package:** Long-Lived Caps

Focus Area: SCFA **Agree with Technology Link:** Y

Benefits (Cost, Risk Reduction, Both):

Technologies	Cost Savings (in thousands of dollars)	Range of Estimate
Alternative Landfill Cover		
Permanent Isolation Barrier System		
Capillary Barrier		
Long-Term Surface Barriers		

Related CCP Milestones	Related Waste Streams	Agree?	Change?
	01382: ER-03AA - Treated Soil to On Site Placement	Y	N
	01391: ER-04F - Sorted D&D to On Site Placement	Y	N

Site Need Code: RF-ER14

Site Need Name: Characterization/Detection/Verification of Non-Aqueous Phase Liquids (NAPLs)

Focus Area Work Package ID: SS-01 **Focus Area Work Package:** Characterization, Monitoring, Modeling and Analysis

Focus Area: SCFA **Agree with Technology Link:** Y

Benefits (Cost, Risk Reduction, Both):

Technologies	Cost Savings (in thousands of dollars)	Range of Estimate

Related CCP Milestones	Related Waste Streams	Agree?	Change?
	01376: ER-02 - Groundwater	Y	N

Technology Needs

Site Need Code: RF-ER15

Site Need Name: Improved Statistical Methods for Sampling and Monitoring Plans and Data Analysis

Focus Area Work Package ID: SS-01 **Focus Area Work Package:** Characterization, Monitoring, Modeling and Analysis

Focus Area: SCFA **Agree with Technology Link:** Y

Benefits (Cost, Risk Reduction, Both):

Technologies **Cost Savings (in thousands of dollars)** **Range of Estimate**

Related CCP Milestones

Related Waste Streams	Agree?	Change?
01380: ER-03 - Soil	Y	N
01384: ER-03B - Soil to LL	Y	N
01376: ER-02 - Groundwater	Y	N

Site Need Code: RF-WM12

Site Need Name: Bulk Debris Characterization Techniques

Focus Area Work Package ID: MW-01 **Focus Area Work Package:** Nondestructive Characterization for Treatment, Transportation, and Disposal of MLL and MTRU Waste.

Focus Area: MWFA **Agree with Technology Link:** Y

Benefits (Cost, Risk Reduction, Both):

Technologies **Cost Savings (in thousands of dollars)** **Range of Estimate**

Related CCP Milestones

Related Waste Streams	Agree?	Change?
01385: ER-04 - D&D Waste (HAZ, LLW, MLLW, TRU/MTRU, Uncontam)	Y	N

Technology Deployments

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Project **RF013 / Closure Caps Project**

		Deployment Year		
Deployment Status		**Planned**	**Forecast**	**Actual Date**
Technology Name:	Alternative Landfill Cover			
Potential Deployment		2000		
Technology Name:	Decision Support System to Select Landfill Cover System			
Potential Deployment		2000		